CLAIMS

What is claimed is:

1. An electrode for use in a battery, comprising:

at least two spaced-apart opposing plates comprising a material reactive to an electrolyte;

an inner chamber defined by said plates; and

at least one aperture extending through at least one of said plates.

2. An electrode as recited in claim 1, wherein said inner chamber is configured to retain a second material reactive to said electrolyte.

3. An electrode as recited in claim 2, wherein said apertures are configured to allow charge and ion migration between said electrolyte and said second reactive material.

4. An electrode as recited in claim 1, wherein said plates are joined at peripheral edges.

5. An electrode as recited in claim 4, wherein said joined peripheral edges provide a peripheral seal between said plates for retention of a second reactive material.

6. An electrode as recited in claim 1, wherein said apertures are defined by bent tabs.

7. An electrode as recited in claim 1, wherein said apertures are defined by perforations.

8. An electrode as recited in claim 1, wherein said apertures provide at least approximately five percent open area in said plates.

9. An electrode as recited in claim 1, further comprising at least one perforated grid member within said chamber.

10. An electrode as recited in claim 1, wherein said reactive material comprises lead.

11. An electrode as recited in claim 1, wherein said reactive material comprises a lead alloy.

12. An electrode as recited in claim 1, wherein said reactive material comprises a lead alloy for use in a liquid electrolyte battery having a lead-acid chemistry.

13. An electrode as recited in claim 1, wherein said reactive material comprises a lead material for use in a liquid electrolyte battery having a lead-acid chemistry.

14. An electrode as recited in claim 1, further comprising a second material (44) reactive to said electrolyte retained within said inner chamber.

15. An electrode as recited in claim 14, wherein said second reactive material comprises a lead-based compound.

16. An electrode as recited in claim 14, wherein said second reactive material comprises a lead-based compound for use within a lead-acid liquid electrolyte battery.

17. An electrode as recited in claim 14, wherein said second reactive material comprises a material in a particulated, non-structural, form which provides increased reactive surface per unit area in relation to the first reactive material.

18. An electrode as recited in claim 14, wherein said second reactive material comprises lead-based compounds for use within a lead-acid liquid electrolyte battery.

19. An electrode as recited in claim 14, wherein said second reactive material comprises a mixture of lead-oxide, glass fibers, and sodium per borate.

20. An electrode as recited in claim 14, wherein said second reactive material comprises a mixture of sulfates, hydroxides, free lead, carbonates, and a binding agent.

21. An electrode for use in a battery, comprising:

at least two spaced-apart opposing plates comprising a first material reactive to an electrolyte;

means for retaining a second material reactive to said electrolyte between said plates; and

at least one aperture extending through at least one of said plates.

22. An electrode as recited in claim 21, wherein said means comprises an inner chamber.

23. An electrode as recited in claim 21, wherein said apertures are configured to allow charge and ion migration between said electrolyte and said second reactive material.

24. An electrode as recited in claim 21, wherein said plates are joined at peripheral edges.

25. An electrode as recited in claim 24, wherein said joined peripheral edges provide a peripheral seal between said plates for retention of a second reactive material.

26. An electrode as recited in claim 21, wherein said apertures are defined by bent tabs.

27. An electrode as recited in claim 21, wherein said apertures are defined by perforations.

28. An electrode as recited in claim 21, wherein said apertures provide at least approximately five percent open area in said plates.

29. An electrode as recited in claim 22, further comprising at least one perforated grid member within said inner chamber.

30. An electrode as recited in claim 21, wherein said reactive material comprises lead.

31. An electrode as recited in claim 21, wherein said reactive material comprises a lead alloy.

32. An electrode as recited in claim 21, wherein said reactive material comprises a lead alloy for use in a liquid electrolyte battery having a lead-acid chemistry.

33. An electrode as recited in claim 21, wherein said reactive material comprises a lead material for use in a liquid electrolyte battery having a lead-acid chemistry.

34. An electrode as recited in claim 22, further comprising a second material reactive to said electrolyte retained within said inner chamber.

35. An electrode as recited in claim 34, wherein said second reactive material comprises a lead-based compound.

36. An electrode as recited in claim 34, wherein said second reactive material comprises a lead-based compound for use within a lead-acid liquid electrolyte battery.

37. An electrode as recited in claim 34, wherein said second reactive material comprises a material in a particulated, non-structural, form which provides

increased reactive surface per unit area in relation to the first reactive material:

38. An electrode as recited in claim 34, wherein said second reactive material comprises lead-based compounds for use within a lead-acid liquid electrolyte battery.

39. An electrode as recited in claim 34, wherein said second reactive material comprises a mixture of lead-oxide, glass fibers, and sodium per borate.

40. An electrode as recited in claim 34, wherein said second reactive material comprises a mixture of sulfates, hydroxides, free lead, carbonates, and a binding agent.

41. An electrode for use in a battery, comprising:

at least two spaced-apart opposing plates comprising a first material reactive to an electrolyte;

an inner chamber defined by said plates;

at least one aperture extending through at least one of said plates; and

a second material reactive to said electrolyte retained in said inner chamber.

42. An electrode as recited in claim 41, wherein said apertures are configured to allow charge and ion migration between said electrolyte and said second reactive material.

43. An electrode as recited in claim 41, wherein said plates are joined at peripheral edges.

44. An electrode as recited in claim 43, wherein said joined peripheral edges provide a peripheral seal between said plates for retention of said second reactive material.

45. An electrode as recited in claim 41, wherein said apertures are defined by bent tabs.

46. An electrode as recited in claim 41, wherein said apertures are defined by perforations.

47. An electrode as recited in claim 41, wherein said apertures provide at least approximately five percent open area in said plates.

48. An electrode as recited in claim 41, further comprising at least one perforated grid member within said inner chamber.

49. An electrode as recited in claim 41 wherein said reactive material comprises lead.

50. An electrode as recited in claim 41, wherein said reactive material comprises a lead alloy.

51. An electrode as recited in claim 41, wherein said reactive material comprises a lead alloy for use in a liquid electrolyte battery having a lead-acid chemistry.

52. An electrode as recited in claim 41, wherein said reactive material comprises a lead material for use in a liquid electrolyte battery having a lead-acid chemistry.

53. An electrode as recited in claim 41, wherein said second reactive material comprises a lead-based compound.

54. An electrode as recited in claim 41, wherein said second reactive material comprises a lead-based compound for use within a lead-acid liquid electrolyte battery.

55. An electrode as recited in claim 41, wherein said second reactive material comprises a material in a particulated, non-structural, form which provides increased reactive surface per unit area in relation to the first reactive material.

56. An electrode as recited in claim 41, wherein said second reactive material comprises lead-based compounds for use within a lead-acid liquid electrolyte battery.

57. An electrode as recited in claim 41, wherein said second reactive material comprises a mixture of lead-oxide, glass fibers, and sodium per borate.

58. An electrode as recited in claim 41, wherein said second reactive material comprises a mixture of sulfates, hydroxides, free lead, carbonates, and a binding agent.

59. An electrode, comprising:

a plurality of spaced-apart substantially planar sections having peripherally joined edges (34a - 34d, 74a - 74d) defining an interior chamber;

said planar sections formed from an active material that chemically supports battery charge generation; and

a plurality of apertures through at least one of said planar sections.

60. An electrode as recited in claim 59, further comprising a second active material within said chamber, wherein said second active material is capable of providing a chemical reaction in support of battery charge generation.

61. An electrode as recited in claim 59, wherein said apertures are configured to allow charge and ion migration between said electrolyte and said second reactive material.

62. An electrode as recited in claim 59, wherein said apertures are defined by bent tabs.

63. An electrode as recited in claim 59, wherein said apertures are defined by perforations.

64. An electrode as recited in claim 59, wherein said apertures provide at least approximately five percent open area in said plates.

65. An electrode as recited in claim 59, further comprising at least one perforated grid member within said interior chamber.

66. An electrode as recited in claim 59 wherein said reactive material comprises lead.

67. An electrode as recited in claim 59, wherein said reactive material comprises a lead alloy.

68. An electrode as recited in claim 59, wherein said reactive material comprises a lead alloy for use in a liquid electrolyte battery having a lead-acid chemistry.

69. An electrode as recited in claim 59, wherein said reactive material comprises a lead material for use in a liquid electrolyte battery having a lead-acid chemistry.

70. An electrode as recited in claim 59, wherein said second reactive material comprises a lead-based compound.

71. An electrode as recited in claim 59, wherein said second reactive material comprises a lead-based compound for use within a lead-acid liquid electrolyte battery.

72. An electrode as recited in claim 59, wherein said second reactive material comprises a material in a particulated, non-structural, form which provides increased reactive surface per unit area in relation to the first reactive material.

73. An electrode as recited in claim 59, wherein said second reactive material comprises lead-based compounds for use within a lead-acid liquid electrolyte battery.

74. An electrode as recited in claim 59, wherein said second reactive material comprises a mixture of lead-oxide, glass fibers, and sodium per borate.

75. An electrode as recited in claim 59, wherein said second reactive material comprises a mixture of sulfates, hydroxides, free lead, carbonates, and a binding agent.

76. A method of increasing chemical reaction efficiency for an electrode assembly configured for use within a liquid electrolyte battery, comprising:

forming a chamber within a first active material; and

inserting a highly reactive second material within the chamber, wherein the highly reactive second material is capable of supporting charge generation within the liquid electrolyte battery.

77. A method as recited in claim 76, wherein the highly reactive second material comprises a non-structural material which provides a higher per-unit area reaction efficiency than that of the first active material.

78. A method as recited in claim 76, wherein the highly reactive second material comprises a reactive material configured in a particulated form which increases reactive surface area.

79. A method as recited in claim 76, wherein the highly reactive second material comprises lead-based compounds for use within a lead-acid liquid electrolyte battery.

79. A method as recited in claim 76, wherein said reactive material is created from mixing a composition comprising lead-oxide, glass fibers, and

sodium per borate.

80. A method as recited in claim 76, wherein the reactive material is created from mixing a composition comprising a mixture of sulfates, hydroxides, free lead, carbonates, and a binding agent.